

REMARKS

Reconsideration and allowance of the subject application are respectfully requested.

Upon entry of this Amendment, claims 1-19 are pending in the application. In response to the Office Action (Paper No. 6), Applicant respectfully submits that the pending claims define patentable subject matter.

The Examiner maintains that the Information Disclosure Statement (IDS) filed December 5, 2001 fails to comply with 37 C.F.R. § 1.98(a)(2) because a copy of JPH-4-26345 was not found in the application.¹ Along with this Amendment, Applicant is providing another copy of JPH-4-26345 and a clean copy of the PTO-1449 Form filed December 5, 2001. Accordingly, Applicant requests that the Examiner initial each of the listed documents on the PTO-1449.

The Office Action did not include an initialed copy of the PTO-1449 Form submitted along with the Information Disclosure Statement filed January 26, 2001. Along with this Amendment, Applicant is providing another copy of the PTO-1449 filed January 26, 2001 and requests that the Examiner initial the listed document.

The drawings are objected to because the Examiner maintains that Figures 25-27 should be labeled "Prior Art". Along with this Amendment, Applicant is submitting a Proposed Drawing Correction wherein Figures 25-27 are labeled "Prior Art". Accordingly, the Examiner is requested to remove the objection to the drawings.

¹ JPH-4-26345 was listed on the PTO-1449 Form submitted along with the IDS filed December 5, 2001 rather than the PTO-1449 Form submitted along with the IDS filed January 26, 2001 as indicated in the Office Action. Further, the Examiner drew a line through the section listing JPH-4-26345 on the PTO-1449 filed December 5, 2001 (rather than initialing the document), thereby indicating that the reference was not considered.

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The abstract is objected to because the Examiner maintains that the abstract contains a grammatical informality. By this Amendment, Applicant has amended the abstract as suggested by the Examiner. Accordingly, the Examiner is requested to remove the objection to the abstract.

Claims 1, 2, 4, 5, 11, 12 and 14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admitted prior art in view of Umeda et al. (USP 6,011,332; hereafter "Umeda") in view of Hiroshi (EP 0671801). Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admitted prior art in view of Umeda, Hiroshi and Kato et al. (USP 6,140,735; hereafter "Kato"). Claim 3 is rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admitted prior art in view of Umeda, Hiroshi and Yoshioka (USP 5,977,668). Claims 6-8 and 15-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admitted prior art in view of Umeda, Hiroshi and Tanaka et al. (USP 5,235,229; hereafter "Tanaka"). Claims 9 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admitted prior art in view of Umeda, Hiroshi, Tanaka and Ishida et al. (USP 5,561,334; hereafter "Ishida"). Claims 10 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the applicant's admitted prior art in view of Umeda, Hiroshi, Tanaka and Yoshioka. Applicant respectfully traverses the § 103 rejections of record.

The Examiner maintains that applicant's admitted prior art (Figures 25-27) and Umeda disclose all of the features of independent claim 1 except for "a capacity of said rear-end blowing means is greater than a capacity of said front-end blowing means, and a front-end air intake flow

rate is greater than a rear-end air intake flow rate”, which the Examiner asserts is disclosed by Hiroshi. However, Applicant respectfully submits that Hiroshi does not provide any teaching or suggestion that would lead one of ordinary skill in the art to believe the alternator of Hiroshi provides these features of claimed invention.

Hiroshi is directed to enhancing the endurance of a bearing disposed at the pulley-side of the alternator and preventing a bearing disposed at the anti-pulley-side of the alternator from creeping. Hiroshi does not provide any teaching or suggestion that would enable cooling efficiency to be raised and enable wind noise to be reduced by controlling the capacity of the fan, the air intake flow rate and the air discharge flow rate. Namely, Hiroshi does not teach or suggest that the capacity of the rear-end blowing means is greater than the capacity of the front-end blowing means, that the front-end intake flow rate is greater than the rear-end air intake flow rate, or that the front-end air discharge flow rate is greater than the rear-end air discharge flow rate. Further, Hiroshi does not disclose or even discuss fan capacity or air flow rate or the problems associated therewith.

The present invention teaches that the capacity of the rear-end fan may be designed to be greater than the capacity of the front-end fan by making the size of the rear-end fan blades greater in size than the front-end fan blades (e.g., see Inventive Examples 1 and 2 on pages 20-22). As discussed in the specification on page 14, the capacity of each fan is defined as the magnitude of a pressure difference upstream and downstream from the fan for a predetermined flow rate, wherein capacity is considered to be greater if the resulting pressure difference is greater for an identical flow rate.

The Examiner asserts that Hiroshi discloses a capacity of the rear-end blowing means is greater than a capacity of the front-end blowing means because "fan blade 8' at [the] rear-end has a greater size than the size of [the] fan blade 8 at the front-end". However, fan blade size (e.g., blade height and blade chord length) is not the only factor that is determinative of fan capacity. That is, by providing a greater number of blades on the rear-end fan than the front-end fan, the capacity of the rear-end fan may be greater than the capacity of the front-end fan when the blade sizes are front-end and rear-end fans are the same (e.g., see Inventive Example 4 on page 23 of the specification). Further, fan capacity is determined by other factors including fan diameter and base plate shape.

The Examiner further contends that Hiroshi discloses that a front-end air intake flow rate is greater than a rear-end air intake flow rate "because the distance from the air intake aperture is so long that the resistance to the air flow is large, [and] the flow rate becomes small". However, distance between the fan and the air intake aperture is not the only factor that is determinative of air flow rate. Rather, other factors such as gaps between the between the rotor pole claws, aperture size, the capacity of the fan, and air resistant objects between the intake and discharge apertures can affect the flow rate.

Further, Hiroshi does not disclose or even discuss fan capacity or air flow rate or the problems associated therewith. As shown in Figure 2 of the present application, when the capacity of the rear-end fan becomes excessively large, the air flow rate achieved by the rear-end fan is larger than that achieved by the front-end fan. In this condition, the rear-end air intake flow rate is greater than the front-end air intake flow rate and the rear-end air discharge flow rate is greater than a front-end air discharge flow rate. Accordingly, even if Hiroshi discloses that the capacity of the rear-end blowing means is greater than the capacity of the front-end blowing means, which Applicant submit is incorrect, Hiroshi does not teach or suggest that “the front-end air intake flow rate is greater than the rear-end air intake flow rate”, as recited in claim 1. Further, the other cited references do not teach or suggest these features of the claimed invention.

Similar to claim 1, independent claim 14 recites that “a capacity of said rear-end blowing means is greater than a capacity of said front-end blowing means”. Thus, claim 14 should be allowable over the combined references for the reasons discussed above. Further, Applicant submits that the combined references do not teach or suggest that “a front-end air discharge flow rate is greater than a rear-end air discharge flow rate”. Although the Examiner asserts this feature is “inherent when [the] front-end intake flow rate is greater than [the] front-end discharge flow rate”, the front-end intake flow rate is not necessarily equal to the front-end discharge flow rate since a portion of the air flow entering the front-end air intake aperture flows to the rear-end air discharge aperture. For example, as discussed on page 22 with regards to Inventive Example 3 shown in Figure 10, by mounting a shielding plate 42 between the rear-end fan 41B and the rear-end pole core 21, the air flow the air gaps between the rear-end claw-shaped magnetic poles

23 and the blade base plates are blocked such that the front-to-rear air flow is eliminated and front-end discharge flow rate is increased. Further, as discussed above with regards to claim 1, Hiroshi does not teach or suggest that the front-air intake flow rate is greater than the rear-end air intake flow rate.

Moreover, Hiroshi does not provide any teaching or suggestion that would lead one of ordinary skill in the art to believe the alternator of Hiroshi provides that the front-end air discharge flow rate is greater than the rear-end air discharge flow rate. As discussed above, when the capacity of the rear-end fan becomes excessively large, the air flow rate achieved by the rear-end fan is larger than that achieved by the front-end fan. In this condition, the rear-end air intake flow rate is greater than the front-end air intake flow rate and the rear-end air discharge flow rate is greater than a front-end air discharge flow rate. Accordingly, even if Hiroshi discloses that the capacity of the rear-end blowing means is greater than the capacity of the front-end blowing means, which Applicant submit is incorrect, Hiroshi does not teach or suggest that "the front-end air discharge flow rate is greater than a rear-end air discharge flow rate", as recited in claim 14.

Accordingly, Applicant respectfully submits that independent claims 1 and 14, as well as dependent claims 2-13 and 15-19, should be allowable because the combined references do not teach or suggest all of the features of the claims.


In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT OF DISCLOSURE:

The abstract is changed as follows:

[A] An alternator includes a rear-end fan which is constructed so as to have greater capacity than a front-end fan. The construction is such that a flow rate in a front-end ventilation pathway in which a cooling air flow enters through front-end air intake apertures is deflected centrifugally by the front-end fan and is then expelled through front-end air discharge apertures is greater than a flow rate in a rear-end ventilation pathway in which a cooling air flow enters through rear-end air intake apertures is deflected centrifugally by the rear-end fan and is then expelled through rear-end air discharge apertures.